FAA
general aviation NEWS
July-August 1983

A DOT / FAA FLIGHT OPERATIONS SAFETY PUBLICATION

In this issue:

Finding Wayward Whuppers, p. 3

Also: • *Mechanic vs Repairman, p. 7* • *Ultralight Inflight Instruction, p. 10* • *Fencing Out High Jumpers, p. 11* • *F.F., Ballooning the Pacific, p. 13*

U.S. Department of Transportation
Federal Aviation Administration

FAA GENERAL AVIATION NEWS

JULY-AUGUST 1983
Volume 22, Number 4

Elizabeth Hanford Dole, *Secretary of Transportation*
J. Lynn Helms, *Administrator, FAA*
Walter Luffsey, *Assoc. Admin., Aviation Standards*
Kenneth S. Hunt, *Director, Flight Operations*
Bernard A. Geier, *Chief, General Aviation and Commercial Division*
David Gelfan, *Editor*
P.A. Duncan, *Assoc. Editor*, Louise Oertly, *Ass't Editor*

FAA GENERAL AVIATION NEWS is published by Flight Operations, AFO-807, Federal Aviation Administration, Department of Transportation, Washington, D.C. 20591, in the interest of flight safety. The magazine is designed to promote safety in the air by calling the attention of general aviation airmen to current technical, regulatory and procedural matters affecting the safe operation of aircraft. Use of funds for printing FAA GENERAL AVIATION NEWS was approved by the Office of Management and Budget through August 31, 1983. All printed materials contained herein are advisory or informational in nature and should not be construed as having regulatory effect. The FAA does not officially endorse any goods, services, materials or products of manufacturers that may be mentioned. **Certain details of accidents described herein are altered to protect the privacy of those involved.**

SUBSCRIPTION SERVICES

FAA GENERAL AVIATION NEWS is sold on subscription by the Superintendent of Documents, Government Printing Office, Washington, D.C. 20402. Use the self-mailer order form in the centerfold of this magazine to subscribe. Prices are subject to change without prior notice.

Please anticipate one to two months for processing orders. Subscriptions are for one year only, and only one renewal notice is sent. Act promptly to avoid lapse of subscription.

Subscription problems. Contact the Service Section, SSOS, GPO, Washington, D.C. 20402.

Change of subscriber's address. Send old label and new address to MAIL LIST SECTION, GPO, Washington, D.C. 20402.

BRIEFS

CAPE COD SPECIAL. Pilots vacationing at "The Cape" (Cod, of course) this summer should be aware of special air traffic control procedures for VFR and IFR traffic in effect through September 30. The temporary procedures are needed to handle the increase in air traffic experienced during the summer months at Hyannis, Nantucket, and Martha's Vineyard airports, where pilots may expect up to two-hour delays during peak traffic periods. For detailed information consult your flight service station or the May 12 edition of Class Two NOTAMs, available at FSSs and most FBO's.

HAZY DAZE. Spatial disorientation—not knowing which way is "up"—has been identified as the cause of about 100 general aviation accidents each year, 90% of which are fatal. The phenomenon often occurs in the hot months when visual reference to a horizon is lost imperceptibly, as during nightfall or the expansion of haze, and transition to instruments is not carried out effectively. Recurrent training in adaptation to instrument references (with another pilot, preferably an instructor, along) can keep you out of the "soup."

IFR CHANGE PROPOSED. FAA has submitted for comment a proposed change to reduce flight time required for instrument rating certification. Under the proposal, an applicant with a private pilot certificate would need only 100 total hours (now 200) and 75 hours of PIC time, of which 50 would be cross-country in a powered aircraft (now 100 and 50). Copies of the NPRM may be obtained free from APA-430, 800 Independence Ave., S.W., Washington, DC, 20591. Send comments no later than September 19 to Docket No. 23672, AGC-204, same street address.

CHECKLIST CHAGRIN? The presence of skittish non-pilot passengers makes some pilots hasten through their appropriate checklists, especially in the face of such questions as, "What to you need that book for? Don't you know how to fly this thing? Are you just learning?"

How to reassure the neophyte politely? Why not clip out this "Brief" and post it in your aircraft to inform passengers that, yes, you do know how to fly this "thing," but the checklist is a failsafe device against human error or forgetfulness that marks the professional pilot—whether he is flying an ultralight "flea" or a jumbo jet.

Finding Wayward Whuppers

Wasteful searches for inadvertently triggered ELTs threaten satellite tracking program

It has been nearly 24 hours since you went down on this heavily timbered slope of Montana's Bitterroot Wilderness Area, and night is approaching again. No planes in sight all day, and you wonder whether you should turn the ELT off during the hours of darkness, when no one is likely to be searching, to extend the battery life. Or should you let it continue operating on the chance that a passing air carrier may pick up the signal? You and your family all suffered serious injuries in the crash into the trees; you cannot move far away from the shelter of the wreckage and you need help badly. The ELT is your main hope for early rescue, since you stayed pretty far off your intended flightpath, and you hate to consider what will happen once the ELT battery goes beyond its normal 48 hour lifespan. What to do . . .?

Pilots may not have to agonize over questions like this in the near future if SARSAT, the new satellite surveillance system being tested for monitoring emergency radio signals, proves to be a success. Satellites already in orbit at 600 miles above the earth's surface are believed capable of providing complete coverage every four to six hours and pinpointing ELT transmitter locations within a few square miles. The consequent reduction in the time required for detection, search and rescue could greatly improve the survival chances of downed airmen.

Time to rescue is the key element in crash survival. Data provided by the Rescue Coordination Center indicates that better than 50 percent of injured crash victims who are rescued within 48 hours will live; after the first two days their survival prospects diminish rapidly to less than 10 percent. This is true even of accidents in gentle climates, during warm weather. The urgent need of treatment for injuries is usually the overriding factor.

Most of the roughly 4,000 annual accidents involving general aviation aircraft take place near settled areas, where injured survivors may be sighted and aided locally by emergency teams—with good prospects of recovery. But for occupants of aircraft forced down in remote areas the prospects are quite grim. In the category which the National Transportation Safety Board calls "Aircraft Missing and Later Recovered," there are some 50 to 60 aircraft accidents a year. Only about *one pilot out of 20 survives*, and only about one passenger out of five. The term "Later Recovered" is not precisely defined, but generally refers to aircraft known to be down, presumed to have experienced an emergency, and not immediately located. The time required to locate the wreckage varies from a day or two to many months.

For the category "Aircraft Missing, Not Recovered," the prospects of survival are virtually nil. Some 40 to 50 accidents fall into this category annually.

There are many reasons for the inevitable lapse of time between an aircraft crash in a remote area and the arrival of aid. Certainly the widespread use of emergency locator transmitters helps; ELTs are credited with saving the lives of several hundred persons each year, who would otherwise not have been located in time to provide urgently needed medical assistance.

In some cases, of course, the ELT fails to transmit, because of some essential deficiency in the construction or installation or maintenance, of which the pilot is unaware. Sometimes the antenna is badly damaged on impact, or transmission is blocked by wreckage debris or by terrain features, like overhanging cliffs or narrow canyons. On some occasions the crash site is not under the flightpath of any overflying aircraft which may be monitoring 121.5 MHz (and the downed plane's whereabouts is not known from a flight plan).

However, many persons involved in search and rescue, like NASA spokesman Bernard S. Trudell, believe that the predominant cause of delays in locating lost aircraft is the extremely high incidence of "false alarms."

Once the "whup! whup! whup!" of an ELT is picked up by an aircraft or an FAA ground station, it is not possible, as some persons imagine, to immediately launch a massive air and/or ground search. The first thing that must be done is to establish whether the signal is coming from an aircraft that is in actual distress, or whether it is a "false alarm"—an inadvertently activated signal. OVER 97 PERCENT OF ALL ELT SIGNALS RECEIVED AND INVESTIGATED PROVE TO BE FALSE ALARMS! Over 10,000 cases are expected to be handled this year.

The initial investigation of an ELT call, usually

Some Causes of False Alarms

1. Oversensitive G-Switches
Activated by landing impact, inflight vibrations.

2. Corrosion.
Short circuits activate unit.

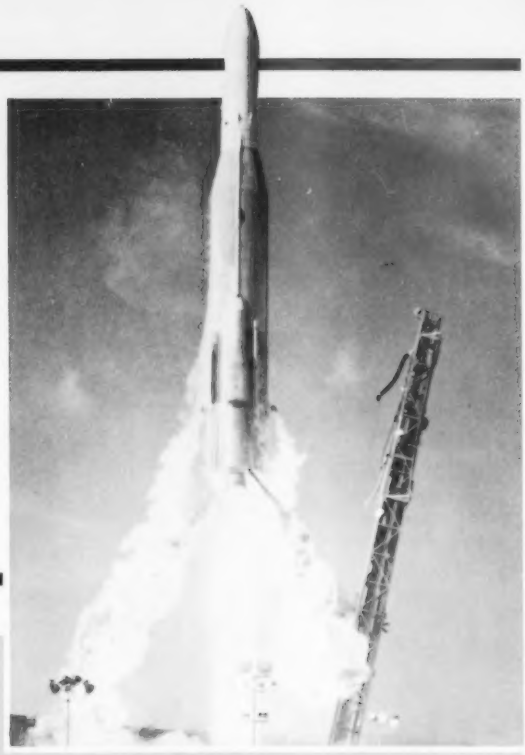
3. Improper Mounting.
Mounted on fuselage skin instead of structural member; or direction of "G" switch improperly oriented.

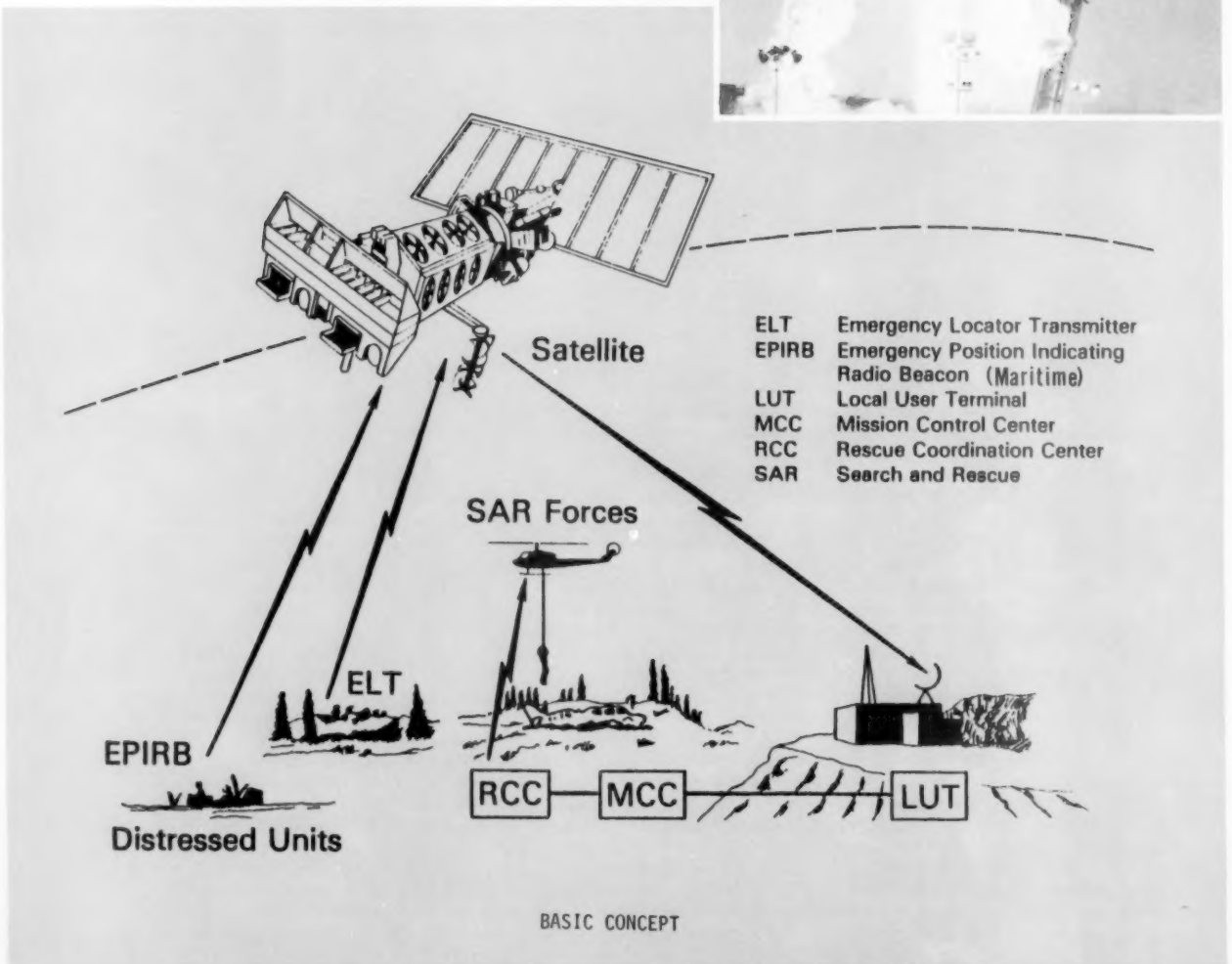
4. Improper Disposal.
Old ELTs should not be trashed. They have sounded alerts years after being discarded. Give to a mechanic for dismantling.

5. Improper Testing.
Test only within first five minutes of hour, and only for three cycles.

6. Improper Shipment.
Improperly packed units have sounded alert while in the mail. Moving signals are hard to track.

Schematic drawing of NOAA satellite launched earlier this year and now in polar orbit. Emergency signals are relayed to strategically located ground stations and evaluated prior to dispatching rescue teams. Satellite avionics are powered by solar array.





BASIC CONCEPT

conducted by an FAA air traffic control tower or flight service station, consists of checking the records for overdue aircraft in the general vicinity of the ELT, from flight plans, weather briefings, telephone checks with airport management and fixed base operators, relatives, friends, etc. If the signal appears to be coming from an airport or any settled area where no crash has been reported, obviously a false alarm is suspected, resulting in a plane-to-plane or house-to-house search, usually conducted with the aid of other Federal officials and local law enforcement officers (FAA does not have authority to break into a locked aircraft or building to silence an ELT).

Activated ELTs have been found in junkheaps, attic rooms, automobile trunks, childrens' playrooms, and just about everywhere one could imagine—including, of course, parked or hangared aircraft. They have been used, illegally, on ground vehicles for various types of personal communications; and such irregular signals can seriously interfere with search and rescue missions.

One extremely lengthy and laborious search, conducted by a ground team, actually resulted in locating a transmitter in a *haystack*, in which a helicopter loaded with illegal drugs had been concealed, while awaiting means of ground transport.

Locating and silencing false alarms is essential, despite the enormous cost in time, manpower and expenditures. However suspect the signal, until it is traced to a source it is not possible to be certain that an emergency does not exist somewhere in the vicinity. In any case, an unsilenced transmission could mask out a genuine or weaker signal. Furthermore, an inadvertently activated ELT in an aircraft that is not silenced could mean a powerless instrument on subsequent flights, when an actual emergency could be experienced.

Once it is determined that a distress signal being heard is probably genuine, the search by land and air is conducted under the supervision of the U.S. Air Force, from its Search and Rescue headquarters at Scott A.F.B., IL. (Overwater searches are supervised by the Coast Guard). The Air Force may launch military aircraft from any of its various bases around the country, or call upon Civil Air Patrol airplanes from CAP Wings in each of the states.

Delineation of the area to be searched is worked out at The Rescue Coordination headquarters only after careful study of all air and ground data. Search aircraft are limited in numbers and very broad stretches of rugged terrain cannot be searched successfully at high altitude, but require low and slow sorties. Qualified SAR aircraft are equipped with homing devices which enable them to track a clear signal, once it is picked up, to its source fairly directly. However, local "atmospherics" may distort a signal, necessitating the flying of back and forth patterns.

Actual sighting of a downed plane, even when it lies directly below the search craft, is not always a simple matter—especially when the occupants are disabled by serious injuries and unable to provide guidance. With the passage of time, Nature has a way of camouflaging wreckage very effectively. Low level searching can be dangerous, and has cost lives among volunteer pilots and other rescue personnel.

The ELT signal is only good for about 48 hours of continuous use. Unsuccessful search efforts are usually discontinued after about one week, for practical considerations.

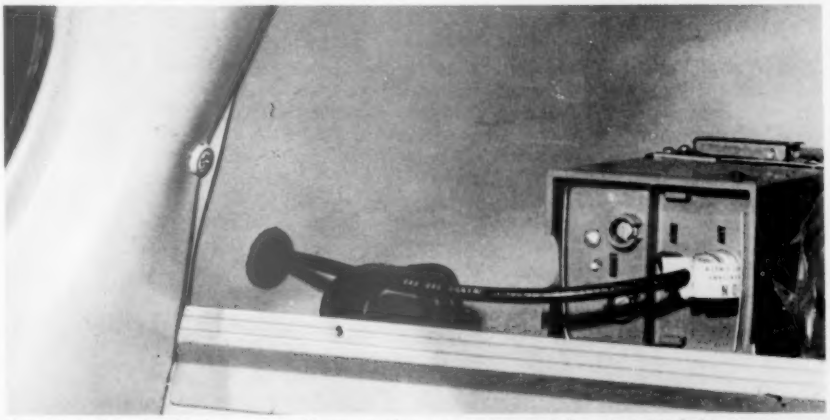
Many of the delay-causing factors of rescue missions may be eliminated if the new program known as SARSAT (Search and Rescue Satellite-Aided Tracking) lives up to expectations. U.S. representatives in this project include FAA, FCC, NASA, the Air Force, the Coast Guard and NOAA. SARSAT is also part of an international search and rescue organization made up of the United States, France, and Canada, with input from Great Britain and Norway. These western nations have been cooperating with the Soviet Union in the relay and processing of rescue information for nearly a decade. In June of 1982 the Russians launched COSMOS 1383, the first satellite to contain search and rescue signal tracking capability. Circling the earth in an overlapping polar orbit, COSMOS 1383 has relayed emergency signals to appropriate ground stations for processing and the initiation of rescue action. In less than ten months the satellite was credited with saving at least 35 lives in a variety of land and sea distress situations ranging from northern Alaska and Canada to Austria.

As of midsummer of 1983, a second Russian satellite and a U.S. satellite are also orbiting the earth at 600 miles up. The American spacecraft is primarily a weather satellite with additional equipment for "reading" 121.5 and 243.0 MHz frequency broadcasts and relaying them to the ground. With three spacecraft in orbit, every point on earth should be covered every four to six hours.

Signals are initially beamed to the nearest Local User Terminal which relays them to the appropriate mission control center for establishing geographical coordinates, and for processing and interpretation. This information is passed on to the Rescue Coordination Center which, in this country, cooperates with FAA and FCC field offices in an attempt to distinguish false alarms from genuine emergencies, before dispatching rescue aircraft, vehicles or personnel.

Here again the "false alarm" spectre surfaces as a threat to the workability of the entire sophisticated system. By providing longitudinal and latitudinal coordinates, instead of approximate locations as in previous systems, SARSAT can eliminate many hours of difficult and costly searching. However, with the extention of signal coverage to virtually 100 percent of the land and sea area, the number of ELT signals forwarded to Rescue Coordination Center could overwhelm the processing system—if the present ratio (97%) of false alarms is continued. This could literally scuttle the entire SARSAT program.

Consider that the Rescue Coordination Center for the entire 48 adjacent states (at Scott A.F.B. in Illinois) has only two persons on duty at any time. Since the use of satellite tracking, emergency calls have jumped up from about seven a day to 15 a day, rising to 40 on Sundays. Processing that many calls is a back-breaking job.



Portable ELT in aircraft cabin is especially prone to becoming unintentionally activated in flight or in transport.

Various devices for drawing attention to an inadvertently activated ELT have been proposed, including warning lights, buzzers, bells, etc. It is also expected that in time a new generation of ELTs will be developed which will be tamper-proof and self-identifying. However, a foolproof mechanical device of this nature will take time, perhaps years to perfect. The only immediately accessible means of reducing false alarms is *voluntary action on the part of pilots and owners.*

A very large proportion—perhaps a majority—of false alarms could be prevented at the cost of only a few seconds of time and—in most cases—without the expenditure of a single penny for equipment. If each pilot simply adds to his shutdown and startup checklist an item for tuning the radio to 121.5 briefly, he will be

alerted to the presence of any ELT signal over the entire airport, as well as from his own aircraft. The life you are protecting by this simple action could certainly be your own. Many ELTs have been activated by a hard landing which did not really seem that hard to the crew, or by turbulence in flight. If the ELT is activated and not turned off, not only will search and rescue personnel be needlessly loaded with work but, as noted earlier, the next time that aircraft flies the ELT battery may be dead.

Checking the 121.5 MHz frequency in your panel radio *before* startup is also recommended, since other persons may have flown the airplane in your absence, or moved it in a manner that started it "whupping" silently. Even if the aircraft was kept in a locked hangar during disuse, it is possible that a wiring short, as a result of corrosion, could activate the transmitter.

The enormous pile-up of false alarms that hamstrings the search and rescue program could be largely dissipated if enough pilots would make these simple, voluntary additions to their operating checklists. What is needed is a change in attitude toward the ELT, as an integral and highly sensitive component of the aircraft. If you use a portable ELT and normally store it elsewhere than in the cabin (car trunk, garage, attic, etc.) make it your business to monitor it with a simple, inexpensive portable VHF radio.

Table of Average Visibility Limitation for Sighting Objects From Search Aircraft

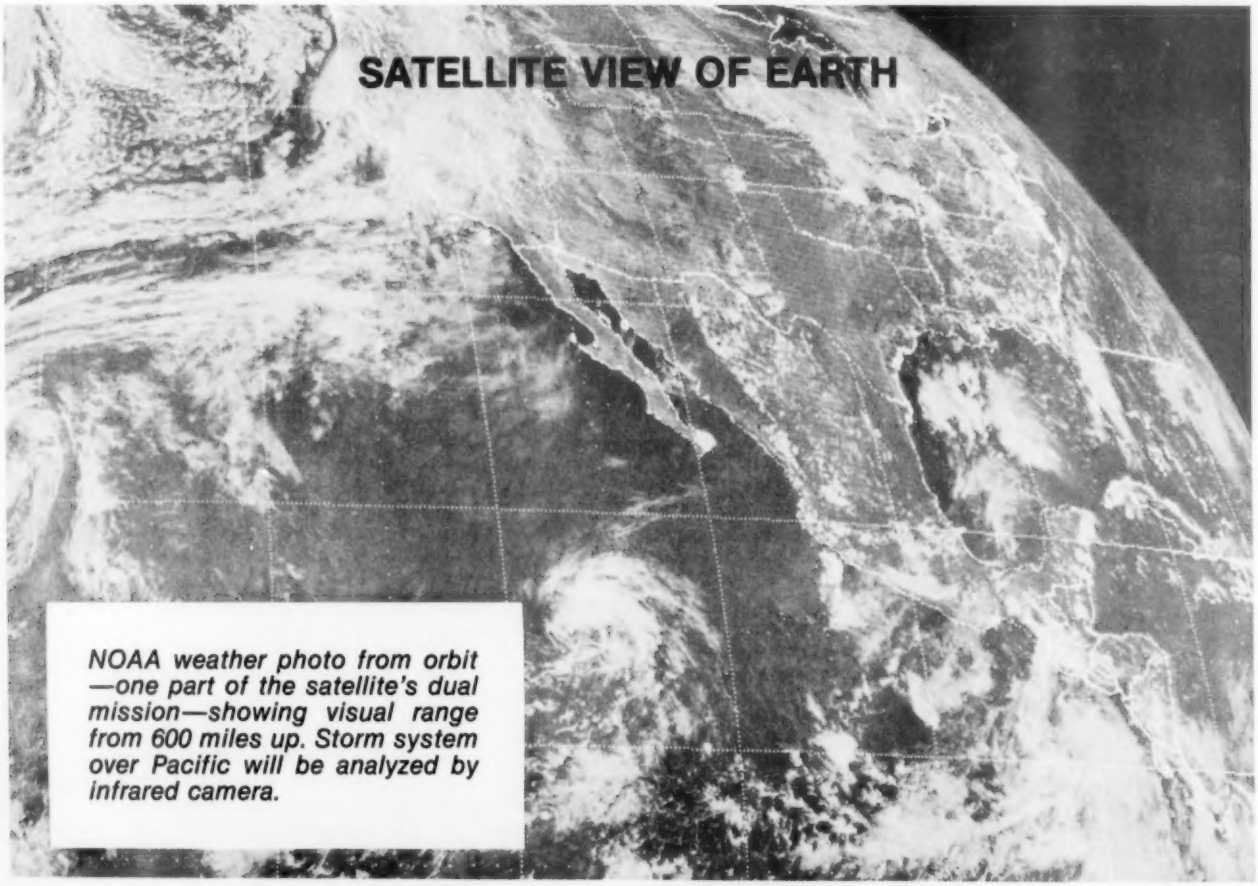
Object	*Visibility*
Man in Life Jacket	½ mile
Man in Small Life Raft	¾ mile
Crash in Wooded Area	½ mile
Man in Wooded Area	½ mile
Crash on Desert or Open Plain	2 miles
Man in Desert or Open Plain	1 mile

Avoid using your aircraft ELT for any purpose other than that for which it was designed and licensed, such as boating or back-packing in the wilderness, or for non-emergency communications. Non-licensed usage is illegal and could jeopardize the safety of others in distress. Use equipment especially designed for these other purposes. Get into the habit of assuming that any ELT which has been handled, moved or untested for a period of time is *likely to be transmitting, unless proven otherwise.*

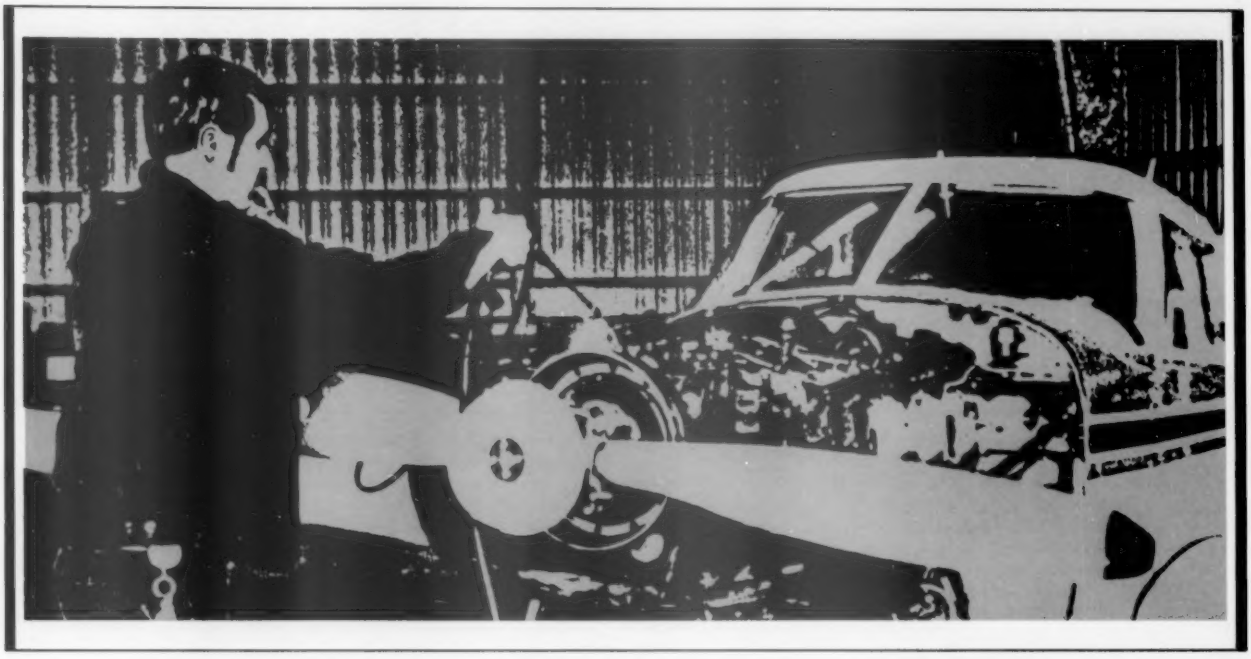
The presence of three ELT-monitoring satellites in orbit this summer does not mean that ground stations and pilots of aircraft overflying remote country need no longer guard 121.5. SARSAT is still very much in a test stage, especially as regards the interpretation of signal data, and its feasibility has not yet been determined. Input of information from ground and air monitors is important to help SARSAT operators learn how to interpret satellite data, and knowledge of any type concerning the movements of aircraft which may be missing is more essential than ever in weeding out false alarms.

We have the technology, but technology alone is not enough. SARSAT, despite its use of intricate space-age electronics, is far from being a completely automated system. Signal surveillance and location accuracy can be expected to improve enormously, but the key factor in search and rescue—actual time to rescue—will depend upon the willingness of the aviation community to invest a few minutes regularly in a nationwide campaign against false alarms.

If you are ever down and lost and in a bad way, it would be nice to know that the searchers are not wasting time looking in the wrong direction for a needle in a haystack. ■



NOAA weather photo from orbit —one part of the satellite's dual mission—showing visual range from 600 miles up. Storm system over Pacific will be analyzed by infrared camera.



MECHANIC vs REPAIRMAN

General practitioners in an age of specialization

Maintenance practices in aviation are more closely controlled by Federal regulation than any other form of transportation—with good reason, considering that a mechanical failure in flight is more likely to cause an immediate emergency than a similar mishap on land or sea. U.S. maintenance standards have resulted in such excellent flight safety records that they have set the pattern for the rest of the world. Nevertheless, in general aviation alone there are an average of about 50 accidents a year (about 10 percent are fatal) that are attributed by the National Transportation Safety Board to "improper maintenance." What, if anything, can the individual pilot or owner do to avoid such accidents?

To begin with, it may help if more pilots understood the system of airworthiness regulation that prevails in this country, which is contained in over a dozen separate rules (FAR Parts 1, 21, 23, 25, 27, 29, 33, 35, 39, 43, 45, 65, 91, 121, 125, 127, 135, and 145) and requires sorting out. All maintenance (except preventive maintenance) performed on U.S. registered aircraft must be done either by or under the supervision of a person holding an FAA certificate. Holders of FAA-issued airframe or powerplant certificates are generally referred to as "mechanics" or "maintenance technicians," who may work alone or in a shop usually called a maintenance shop or a fixed base operation. (It may also be referred to by some as a "repair shop" but it is not an officially certificated *repair station* unless the owner holds an "FAA Repair Station Certificate.)

The maintenance shop conducted by certificated A and P mechanics need not be certificated by FAA, nor regularly inspected. Some work in such a shop may be done in part by employees who are not licensed in any way—essentially laborers or apprentices who function under the supervision of certificated mechanics. This is a perfectly legal practice, as long as the supervisor personally observes that the work is done properly, and is always available for consultation.

The regulations (Part 65.81) allow A and P certificated mechanics to perform or supervise work on any aircraft or component (excluding major repairs to propeller systems and all repairs to instruments); to approve the aircraft for return to service after minor repairs or alterations and to perform inspections (other than annual inspections). *However, this privilege is extended only to persons who have already performed the specific operation satisfactorily at an earlier date, and who understand the current recommendations of the manufacturer and the maintenance manuals.*

Normally maintenance shops adhere closely to the intent and letter of this regulation. If you happen to find one that does not—that assumes a capability for working on any part of any type of aircraft regardless of familiarity, or does not bother much about reading manufacturer's recommendations, or manuals, but depends only on "know-how," take your business elsewhere. Locate a reliable shop that works frequently on your make of aircraft, perhaps by asking other owners.

If you have to go some distance to accomplish this, and your aircraft is already out of annual or otherwise unairworthy, apply to the nearest FAA Flight Standards district office for a special flight permit to ferry the aircraft to a place where the maintenance can be accomplished.

Mechanics holding a certificate with both the airframe and powerplant ratings and who have had at least three years of experience are eligible for an **Inspection Authorization,** which is required by FAA to:

(1) Inspect and approve for return to service aircraft or components after a major repair or alteration (except aircraft maintained under a continuous airworthiness program under FAR Parts 121 or 135);

(2) Perform an annual inspection or supervise a progressive inspection, according to FAR Part 43.

Inspection Authorization holders may freelance between several shops, or may be attached to one particular operation.

An official FAA **repair station** is a facility certificated for the maintenance and alteration of specific kinds of aircraft and aircraft components, located in many cases where highly specialized equipment and skills are required. The work that may be performed at each station is

AVIATION TECHNICIAN LICENSES

Title & FAR Part	Qualifications	Privileges	Duration of Certificates	Approval for Return to Service
AIRFRAME AND POWERPLANT CERTIFICATE Part 65	18 years of age, and speak and read English. Experience: a) graduate of an approved school; or b) 18 months of practical experience for rating sought, or 30 months for both ratings. FAA written and oral tests. Recent experience within preceeding 24 months.	Perform or supervise minor repairs or alterations, except for instrument repairs and major repairs to propeller systems. Performs 100 hour inspection.	Lifetime, unless suspended, revoked for cause, or surrendered.	Aircraft or components, following minor repairs or alterations.
INSPECTION AUTHORIZATION Part 65	A and P certificate held for at least three years. Recent experience during the preceeding 24 months. Have "available" all the necessary data and equipment, plus a location where he can be regularly contacted. Written FAA test.	Perform or supervise annual or progressive inspections.	Must be renewed each year by FAA with either proof of recent experience or an examination.	Aircraft or components following major repairs or alterations.
REPAIR STATION CERTIFICATE Part 145	Station supervisor with at least 18 months experience (excluding apprenticeship) in all forms of repair or alteration for which station is rated. For airframe ratings, experience with annual and progressive inspections also required. FAA approval of equipment and facilities appropriate to rating, with periodic inspections. Appropriately trained personnel, including at least one certificated repairman rated in accordance with station rating. Current experience and training roster for all maintenance employees.	Maintain or alter any airframe, powerplant, propeller, instrument, radio or accessory or part for which it is rated. If airframe rated, performs annual or progressive, or 100 hour inspection.	Until surrendered, revoked or suspended. (Foreign repair station certificates must be renewed biennially after the first 12 months.)	Any aircraft or component for which it is rated, after repairs or alterations.
REPAIRMAN CERTIFICATE Part 145	18 years of age, and speak and read English. 18 months of practical experience or formal training in specific job for which he is being licensed. Recommended by the repair station which employs him.	Perform or supervise maintenance or alterations appropriate to specific job for which he was certificated.	Lasts as long as he is employed by repair station where he received his certificate.	Work must be returned to service by the station following appropriate inspection.
FEDERAL COMMUNICATIONS COMMISSION LICENSE FCC regulations	Written examination for the FCC "General Radiotelephone Operator License." (Note: Holders of valid FCC First or Second Class Commercial Radiotelephone Operator Licenses may also service and maintain aircraft radio equipment.)	Maintenance on aircraft radio equipment.	Must be renewed every five years, but no new examination.	Not privileged, work must be returned to service by appropriately rated repair station, or Inspection Authorization holder.

limited by the certificate to one or more of six specified "ratings":

(A) Airframe, (B) Powerplant, (C) Propeller, (D) Instruments, (E) Radios, and (F) Accessories.

The ratings are further subdivided into "classes," according to such factors as size of aircraft or engine, composite or all metal construction, gyroscopic or electrical instruments, etc.

The specialization may be further broken down by certain rating limitations issued to a given repair station. A certificate may be rated for only one particular make and model of airframe; or engine; or propeller; or for instruments of one make and model; or for floats only, by make; or for aircraft fabric work only; or for any other specialized purpose which the agency finds appropriate.

A repair station may recommend any type of specialist for a **repairman's certificate** if his specialized skills are needed by that station. This is particularly true of stations rated for instrument and radio maintenance. Nevertheless, a repair station must also have adequately certificated personnel (A and P mechanics and/or repairmen) as appropriate for supervising all work undertaken.

No formal repairman examinations are required by FAA, but the agency will carefully evaluate each individual's background and preparation and may if necessary require a personal test. A certificated repairman must be at the level of a shop foreman or department head. The certificate is valid only for the duration of employment at the repair station.

All persons performing **maintenance on communications radios** must hold an appropriate commercial operator license from the Federal Communications Commission, in addition to any other certificates they may hold. However, no FCC licensee who is not appropriately certificated by FAA may return an aircraft to service following radio maintenance.

What does all this mean to owner/pilots?

The A and P mechanic may be compared with the general practicioner in medicine: both have a broad basic knowledge of their field and varied experience—plus, in the case of many mechanics, a longstanding acquaintance with the owner/pilot and his aircraft. On the other hand, the repairman tends to work within a narrower scope, and may see more of one particular kind of problem which he learns to deal with very skillfully. He may also have the advantage of more specialized equipment and training. Each owner/pilot must decide what kind of shop is most important to him.

Some owner/pilots make it their business to become better acquainted with their aircraft maintenance and inspection by participating in it to the extent permitted by law. A few (but not many) maintenance shops invite owners to assist in repair work or inspections by doing some of the simpler preliminary "unbuttoning" of their own aircraft under supervision. This may include removing cowling, fairings, spark plugs, filters, seat cushions, etc., and perhaps cleaning the airplane.

Most shops, however, regard these preliminary steps (apart from cabin cleanup) as an important part of their job, enabling them to spot surface indications of troubled areas. They may also be limited by insurance provisions. Some shop owners may be willing to allow owners to *observe* maintenance or inspection and ask questions about it—with the understanding, of course, that such conversations may add hours to the billing charge for the job.

Owner/pilots are often willing to absorb this extra cost in order to pick up a first hand knowledge of how and why their aircraft is maintained. They will also have an opportunity to learn something about how to prolong the trouble-free operating life of their aircraft; and how to spot warning signals of incipient mechanical failure. Many persons have never seen their engine, for example, when the cowling is completely removed—revealing perhaps a tell-tale accumulation of fluid drippings. The evidence of wear and heat damage that lies hidden under grime is a good object lesson in the importance of cleaning the aircraft frequently, inside and out. "What you can't see, you can't inspect" is the maxim of every good maintenance shop.

The extent of corrosion around the battery box frequently brought to light at an annual inspection is a sobering discovery for many pilots who have never looked at the battery or even know where it is. Battery surface conditions can be a warning of impending trouble, long before an inflight power failure occurs, characteristically in IFR conditions or at night.

The amount of unnecessary debris and loose equipment that accumulates inside a cabin in the short period between inspections is a common source of wonder. Cockpit debris has caused accidents by derailing seats, jamming rudder pedals or other flight controls, starting fires, "nesting" wildlife, etc. When you clean it all out yourself, instead of leaving this to the inspecting mechanic, you get some idea of why an annual can take up to two days to complete.

A pilot/owner may find, before he has removed some odd tools from the cockpit, that his compass deviation card is off by 10 to 20 degrees, which explains some navigation problems he has been having lately. He may also find, when he takes the time to examine the entire panel carefully and methodically, without feeling the excitement of an impending takeoff, that his altimeter or rate of climb indicator are in error, or that his turn and bank indicator is not showing a neutral attitude.

The pilot who has looked over the hinge attachments along the wing and tail section of his airplane dozens of times on preflight checks, with negative results, may be embarrassed to find that during an annual inspection one or more cotter pins are observed to be missing. *(Are you going blind? No, not necessarily. When your mind is on the flight ahead, there is always a tendency to ignore little things right in front of your nose.)* One of the great advantages of becoming involved in maintenance work is that it teaches you to look at an aircraft objectively, so that you can pick up on discrepancies that might have gone unnoticed—either by yourself, or by the occasional oversight of a technician.

Participating in the maintenance of your aircraft is also a good way of learning something about the operation of the shop where you have your work done. You may be able to observe how familiar they are with your type of aircraft, how attentive they are to details and regulations, what percentage of their employees are FAA-certificated, how many hold inspection authorizations, etc.

Maintenance related accidents have disclosed that occasionally for reasons of haste, or economy, aircraft have been returned to service with improper parts, with missing parts, after incomplete inspections, etc. How often is a flight so urgent as to warrant such a risk?

Once you understand, from experience, how careful and painstaking work aviation maintenance is, you will be leery of any shop that offers bargain prices or quick fixes. In general, what you pay for is what you get. Similarly, you will understand why it is unwise to be impatient about the time required to complete work on your aircraft. Mechanics are human, and if they try to oblige you by moving too fast, they could make a mistake, forget a small but vital item, or overlook an apparently insignificant discrepancy.

Earlier this year the owner of a *Bonanza* based in Arizona put his aircraft in a shop for an engine overhaul three weeks prior to a planned flight to a business conference in San Diego. A day before the departure date he was very upset to learn the work had not been completed, due largely to delays in obtaining approved parts.

Unwilling to change his plans and take a commercial flight (several friends had been invited to go along on the trip) he persuaded the mechanic to agree to putting on a night shift in order to complete the work on time. It was after midnight when they finished up. The mechanic slept poorly, worried about whether in pressing on with the job they had made any mistakes. A qualified pilot, he decided to get up early in the morning and take the *Bonanza* up for a test flight before returning it to service.

The flight went fine up to the point when the mechanic/pilot returned to the vicinity of the airport and prepared to enter the pattern. He then experienced difficulty with throttle control and was forced to land with excessive speed, damaging the landing gear and the propeller. Only his pride in his workmanship was hurt (an unsafetied throttle bolt was discovered during the consequent investigation), but rushing the job could have led to much more serious consequences if the *Bonanza* had not been test-flown. MORAL: *Do not lean on mechanics. You can never tell who will end up bent out of shape.* ■

Ultralight Flight Instruction

Scope of exemptions for training in two-place machines

In the interest of fostering flight training and air safety, FAA has issued exemptions to three ultralight organizations which will allow two-place ultralights to be operated under Part 103 for the purpose of giving instruction only, under certain specified restrictions.

FAA inspectors are aware of the concern expressed by some aircraft pilots about sharing airport traffic patterns and other airspace with ultralight vehicles flown by uncertificated persons. Thus far there are no reports of ultralight/aircraft midair collisions, but there have been near misses reported before the adoption of Part 103.

Under the exemptions, instruction in powered two-place ultralights may be given only by a person authorized by the Ultralight Division of either the AOPA Air Safety Foundation or the Experimental Aircraft Association (EAA), in vehicles weighing no more than 350 pounds, with a power-off stall speed no higher than 29 knots. No other limitations of Part 103 are exempted.

Anyone operating a two-place ultralight under Part 103 without an authorization as provided in these exemptions faces fines of up to $1,000 for each section of the regulation violated per flight.

A powered two-place trainer operated under the exemptions must be placarded, "To be used for instruction only," and one of the two occupants must be a person authorized by ASF or EAA (whichever is appropriate) to provide flight training under these exemptions. This person will be a certified flight instructor or a person recognized as an ultralight instructor.

All flights must be limited to flight training. Some solo ferry flights by the person holding an authorization are permitted. A student must be informed that his flight is being conducted under an exemption and that the vehicle does not meet FAA aircraft certification standards.

Each person allowed to give instruction under the exemptions must be issued a numbered individual authorization and a copy of the exemption, with which he or she must be familiar and which must be presented to FAA for inspection upon request.

A separate exemption was issued to the U.S. Hang Glider Association containing similar provisons covering unpowered, two-place vehicles operated for the purpose of giving instruction from launch sites approved by USHGA.

Individuals wishing to give or take instruction under the exemptions granted these organizations should write for details to:

- AOPA Air Safety Foundation
  Ultralight Division
  421 Aviation Way
  Frederick, MD 21701
- EAA Ultralight Association
  P.O. Box 229
  Hales Corners, WI 53130
- USHGA
  P.O. Box 66306
  Los Angeles, CA 90066

Each organization may have its own additional requirements that applicants will have to meet before authorization to give or receive instruction is granted. ■

Questions and Answers

Q: What about the N-numbers and airworthiness certificate of a two-place ultralight operated as a trainer under Part 103?

A: The N-numbers may be left on, but the airworthiness certificate must be turned in to FAA.

Q: What exactly constitutes a two-place ultralight?

A: Any ultralight with two separate seats constitutes a two-placer. However, an ultralight with any seat that *could accommodate two persons* also may be considered "two-place."

Q: What protection is given to the public by these exemptions?

A: The student must be told that the flight is being conducted under an exemption in an uncertificated vehicle. The student is advised of and accepts a risk that a member of the general public need not be exposed to.

Q: After completing a flight training course in a two-place ultralight with an authorized instructor, can the student then solo the two-place ultralight?

A: No, at this point in the training the student would be transitioned to a single-place ultralight.

Q: Will a two-place ultralight operated for training be allowed a greater fuel capacity?

A: Negative. All other provisions of Part 103 must be met.

Q: Does a person have to be a member of any of those exemption holding organizations to get an authorization as instructor, or to take instruction?

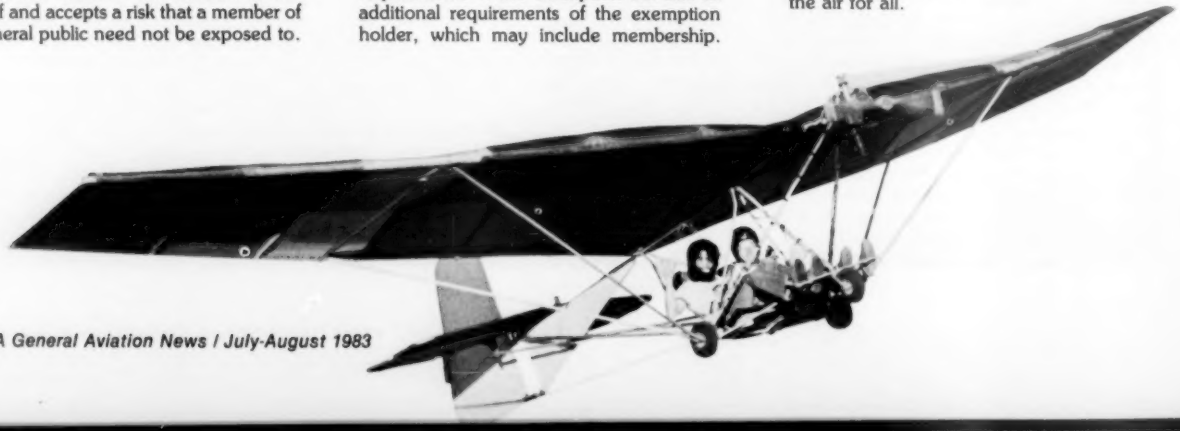
A: A person wishing to obtain an instruction authorization will have to meet not only the requirements of the exemption but also all additional requirements of the exemption holder, which may include membership. The latter may also establish certain requirements for trainees.

Q: Does the person authorized to conduct flight training in a two-place ultralight have to keep that authorization on his person while giving instruction?

A: Affirmative. It must be shown to any FAA inspector on request.

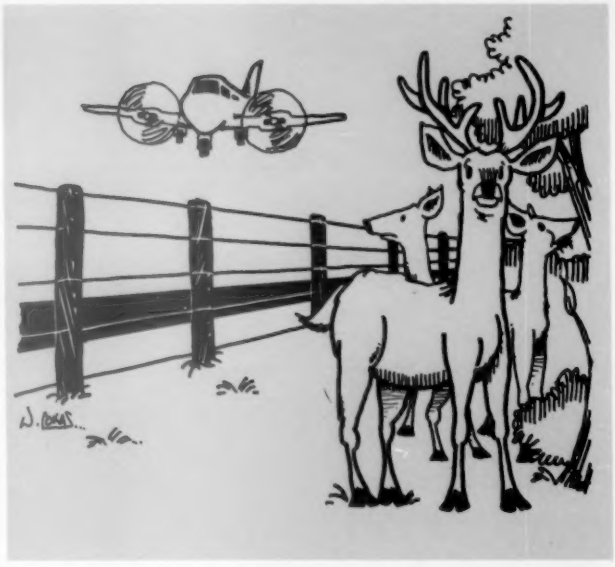
Q: Are these exemptions a foreshadowing of numerous exceptions to Part 103 to come?

A: No. Exemptions to Part 103 are expected to be few and far between. Since adequate training has been difficult for a student aloft with an instructor on the ground, the two-place exemption was seen as a means to reduce the accident rate in ultralight operations and improve safety in the air for all.



Fencing Out High Jumpers

An endearing solution to an irritating problem



The longstanding problem of how to keep wildlife, as well as domestic livestock, away from airport runways without enormous outlays of money to barricade the airport appears to have been solved by means of relatively low-cost fencing techniques developed in the down-under sheep country of New Zealand and Australia and in the United States.

A pioneering installation, completed last summer at Kanawha Airport in Charleston, W. VA with funds and engineering assistance from FAA's Office of Airport Planning and Programming, has successfully demonstrated that a five foot high, five-wire electrified fence is capable of keeping out all types of large animals—and most two-footed strangers as well. The results are of interest to all operators of airports or landing strips located near wildlife populations.

At first thought, given the known ability of deer to leap over 10 to 15 foot obstacles, the idea of an effective five-foot fence would appear naive. However, field studies by the Pennsylvania Department of Agriculture and other government agencies have shown that deer, like most animals, tend to investigate barriers initially with their nose; and that they will try to poke or prod their way through moderate-sized obstacles before making the effort needed to leap over them. If the investigation results in a nasty jolt, they will normally back off and detour around the pain-producing structure rather than risk another painful encounter. Some persons believe that deer actually can sniff out the presence of electrons pulsating along the wires and will give them a wide berth for that reason, but there is no scientific proof of this theory.

The mysteries of animal behavior notwithstanding, Jeff Bubar, Director of Kanawha Airport at Charleston is delighted with the results of this new type of fencing, which was completed at about one-quarter the cost of the original estimate for conventional fencing to prevent deer encroachment. For a perimeter of approximately 22,000 feet the total expenses, including surveying, design, wire, posts, electrical "energizers" grounding, terrain clearance, etc. came to under $100,000—less than $5.00 a linear foot.

Before the airport at Charleston was enclosed there had been a series of scary aircraft/deer collisions, most recently with air carrier aircraft. A Boeing 737, landing at night, struck a deer with the nose wheel, resulting in a momentary swerve before the pilot was able to regain control and land safely. A BAC-111, taking off in the early morning, also struck a deer with the landing gear. The pilot completed his takeoff without difficulty, but decided not to take up the landing gear, on the chance that it might have been damaged or encumbered. He flew at reduced airspeed to Pittsburgh, where he landed without incident.

Most of the collisions with animals, or accidents resulting from an effort to avoid such contact, involve general aviation aircraft operating at rural or mountain airports or from private strips, usually in the early morning or late afternoon and often under conditions of reduced runway visibility. (The high deer fences erected at some private strips have also been a hazard to pilots unfamiliar with the area.)

A typical accident involved a Cessna 177 *Cardinal* departing from Lopez Island in Puget Sound, on a dark night when patches of fog hung over the ground. The pilot had flown into the resort island from Seattle that afternoon, with three other persons on board, and was returning to base after a short visit. The deer strike took place at a point 1,600 feet down the runway, apparently after the *Cardinal* had become airborne. The deer was hit by the horizontal stabilizer and evidently pinned in place temporarily (the animal's body was found under the flightpath 220 feet distant). The aircraft itself continued in flight for approximately one-quarter mile, before striking a clump of tall fir trees and crashing. There were no survivors.

Lopez Island is largely wooded. The runway at the unattended airport has a golf course on one side, separated by a low fence, and a cleared area on the other side, leading into the woods. The grass is clipped low, to avoid attracting deer. But deer are strong creatures of habit, and tend to continue following customary pathways between feeding grounds despite the establishment of man-made structures.

Other animals, such as cattle, horses, goats and even large dogs have caused problems on runways, but deer are the most frequent hazard. An airport like Kanawha at Charleston is particularly vulnerable because it is located on a flattened-off mountain top, with heavily wooded Coonskin County Park at the eastern extremity and thousands of acres of National Forest land nearby. Even though tower controllers keep a watchful eye out for deer, the animals can easily be hidden from sight along the sloping edges of the airport and bound up and onto the field without warning. The notation, "Deer occasionally seen on runway," is still carried in the FAA Airport/Facility Directory in Charleston, but hopefully this is becoming little more than a memory of days past, with the evident success of the electrified fence.

How Fences Work

Historically, electrified fences have been limited to short runs or enclosures. The high electrical impedance formerly required for long runs created too many problems, sometimes resulting in grass or brush fires, or injuries to persons or animals. Accidental shorting, from plant growth or windstorms, often disabled large sections of fence. Electrified fences employ a charger or "energizer" which sends out successive bursts of energy, or pulses, along the entire length of the fence. The pulsation is sometimes audible. If the circuit is shorted by contact between a hot wire and a ground (either a ground wire in the fence, or the earth itself serving as a ground) the animal receives a hefty discharge of electricity. ⟶

Charleston, WV airport where new fence has apparently eliminated deer intrusions.

The most recent type of fence chargers, however, operate with an extremely short burst of high energy, with a low impedance pulsation that limits the energy expenditure, so that posts or brush are not burned and contact by human beings is safe, although unpleasant. These energizers, utilizing the latest advances in technology, can electrify up to 50 miles of fence without losing voltage appreciably. Battery as well as plug-in units may be used for the power source, and some types of batteries may be renewed by solar arrays.

Although these low impedance chargers are not yet manufactured in the United States (they were developed for sheep stations in New Zealand), they are now becoming available from some livestock fencing dealers here.

The fence at Charleston is five feet high with five strands, three "hot" wires alternating with two ground returns. The wire is 12.5 gauge high-tensile steel, held under a tension of 200 lbs. per sq. in. Tension, maintained by springs in the wire, prevents sagging and possible shorting and reduces the number of support posts needed. The posts are 4″ by 4″ treated softwood, spaced about 50 feet apart, and driven four feet into the ground. Spacers are also used wherever necessary, to maintain even wire separation. The wires are held by ceramic insulators. (Some types of dried hardwood, creosote-treated posts may be used in direct contact with the wires.)

The fence chargers used here produce a very short (0.0003 second) pulse of 5,000 volts at 20 to 30 amps. Ground rods are implanted every 1,000 feet.

A special new feature is the "flood gate controller," which automatically cuts the bottom wire out of the system in the event it is short-circuited by flooding, grass encroachment, animal damage, etc. The remaining wires continue to be fully charged.

Power is supplied at Charleston by alternating current, with consumption so low that at times the meter shows a zero reading even when the charger is pulsating.

Fence Maintenance

During installation the fence line was cleared of brush, trees and grass for a distance of about eight feet on either side, and any existing gullies or humps were leveled. Providing a generous clear area outside the perimeter is considered important because it allows deer to see and investigate the fence and consequently decide to go elsewhere or around it. Where fences have been placed too close to cover, deer have been seen to come bounding out of the woods and leap across without breaking stride.

Care must be taken in laying out electric fences to avoid stringing them directly under existing power lines which, if damaged, could fall across the fence and possibly provide a lethal voltage along the entire fence. Special power cut-off switches for de-electrifying the fence are supplied at Charleston, and made known to all security personnel.

Another concern was the possibility that the fence line could interfere in some way with the functioning of electronic NAVAIDs at the airport. The fence was checked out carefully by FAA's Airways Facilities engineers and given a clean bill of health. The electric fence did not even "paint" on the airport surveillance radar.

Overall, upkeep costs are minimal. A periodic visual inspection of the entire fence line is required, to check for breaks, downfalls, weed buildup, washouts, gates left open, etc. Voltmeters are used at intervals to test for any voltage dropoff. There is seldom any need for major repairs. Signs warning people that the fence is electrified are posted conspicuously and kept clean and readable.

FAA studies of wildlife behavior in various sections of the country have shown that to be effective fencing must be appropriate to local terrain, weather and wildlife conditions. Electrified fences have been quite successful against moderate populations of white-tailed deer in the eastern states, but elsewhere newly designed, non-electrical fences may be more advantageous.

Large herds of mule-eared deer in the west, for example, have been known to leap over relatively low electrified fences without stopping to investigate, when they are migrating to new feeding grounds. Certain species of elk will butt their way unhesitatingly through light wire fences, even when the wires are charged. For advice and assistance in airport fence construction, contact your nearest FAA Airports field office.

Hopefully the widespread use of low-cost protection will eliminate the threat of deer on runways once and for all—without eliminating the deer. ■

Ballooning the Pacific in 3½ Days

Once, it seems, is never enough when it comes to long distance ballooning heroics—at least not for Ben Abruzzo and Larry Newman. The fanfare over their *Double Eagle II* balloon flight over the Atlantic, with Maxie Anderson in 1978, had hardly died down when these two businessmen-aeronauts began talking about a distance record that would stand up for years to come—maybe forever.

Prospects for a global circumnavigation—the big dream—appeared to be mired in a welter of logistical, political, and diplomatic problems, not to mention the enormous drain on their personal finances. But a 6,000 mile transpacific flight, from Japan to San Francisco, seemed a good possibility, especially after their party was joined by Rocky Aoki, a dynamic Japanese former Olympic wrestler turned restauranteur. Rocky had successfully backed all kinds of ventures in the United States, from Broadway shows to speedboat regattas, and had lately become a ballooning enthusiast while recuperating from a speedboat accident.

With Rocky's assistance, a launch base was arranged at Nagashima, a seaport city on the east coast of central Japan, where local business interests agreed to host their entire entourage—eventually totalling 16 persons. To round out the four-man air crew which "Captain" Ben considered necessary, he enlisted Ron Clark, like himself a wealthy Albuquerque real estate developer, sportsman, and skilled balloonist. The 12-man ground support group was headed by Ed Yost, the legendary balloon builder and pilot.

The vessel which the team brought to Nagashima early in 1981, was a sight to see. The *Double Eagle III*, twice the size of its Atlantic-crossing predecessor, dwarfed the city structures with its 26 story, 400,000 cu. ft. envelope. The gondola, 18 feet long, 7 feet wide and almost 9 feet high, was a space-age wonder of light-weight strength, constructed of fiberglass and Kevlar 49, an extremely hard polyester. Catamaran-shaped for seaworthiness in case of a forced water landing and provided with a leaded keel, rudder, sails, and plexiglass escape hatches, it weighed only 600 lbs. empty. At launch it would contain some five tons of ballast, plus portable oxygen for six days, high altitude and cold weather gear, cameras, radios and navigation gear, with 17 storage batteries and a gasoline generator for power. (Frequent battery failures had occurred on earlier high altitude flights in non-pressurized equipment.) There was also a cooking range for chef Aoki and a 30-day supply of food (enough for girdling the globe). They expected to reach California within four days, but if the weather was favorable they were prepared to go on indefinitely.

As it happened, the flight of the *Double Eagle III*, launched on March 2, 1981, to the cheers of a flag-waving crowd, traveled less than 100 feet, as unexpected winds released the restraining cables prematurely and the envelope was damaged. Not to worry, said Captain Ben. A back-up envelope, wisely provided, was installed overnight; there was still time to launch ahead of westerly winds driving a storm front toward California. Early the next morning the cheering crowd, with flags and band, reappeared. But the second launch was a replay of the first, and the envelope of the *Double Eagle IV* went on the scrap heap. This time everyone went home.

It was eight months before a new envelope could be completed for *Double Eagle V* and a third launch effort organized at Nagashima.

This time the launch "window"—a relative calm before the arrival of strong westerlies—dictated a departure on November 10. Once again the lift-off was endangered as the gigantic balloon and gondola, weighing almost 15,000 lbs., experienced a premature "false lift" and was driven briskly toward a seawall lined with cherry trees. Instant ballasting allowed them to escape to sea after only a minor brush with a tree, and they were off and running for San Francisco Bay.

From top left: Abruzzo, Aoki; Newman, Clark

Their basic navigation instrument was a "Tracor Satellite Navigator II," or SATNAV, a sophisticated onboard computer/receiver which combined satellite tracking data with other navigational inputs to give a constant position readout. OMEGA long range navigational inputs were picked up by low frequency receivers. Their radio "bank" also included short wave and HF for long distance communications; VHF (for contacting other aircraft); a marine radio for signalling ships; an air-to-ground telephone for overland communications; and a special satellite transmitter to enable the Rescue Coordination Center at Scott AFB in Illinois to track the flight across the Pacific. As backup against total power loss they carried the traditional sextant (for celestial navigation).

By and large, navigation was not a problem. There were some difficulties with the SATNAV system due to exposure to high altitute, and to their failure to maintain estimated course speed, or to correct some of the OMEGA inputs promptly, but their lateral course was essentially a beeline toward the Golden Gate. Their vertical track was the real nightmare.

Icing, the same problem that had ditched the first *Double Eagle* in the sea off Iceland, began on the very first day over the Pacific. Their commercial weather service had assigned a cruise altitude of 25,000 feet for maximum windspeed, and their ballast supply was calculated to give them that altitude with ease. However, two factors upset their calculations. The weather front driven by their favoring westerlies contained so much moisture that the constantly overcast skies prevented the expected lift power from sun heating; and at the same time allowed *tons* of ice to form on top of the envelope as they ascended into subfreezing temperatures.

The upward progress was stopped at 19,000 feet on the first day by formation of a massive ice "cap" which they were never to dislodge. Cooling air overnight and the ice weight drove them down to 4,500′ by the next

(continued on back cover)

GERONIMO? A flying parachute may seem like an aeronautical impossibility, but here is the latest ultralight variation. Stephen Snyder's *ParaPlane* is a standard parachute wing with its operator slung in a seat beneath it. Two counter-rotating props are powered by twin 15-hp engines positioned behind the seat. Steering is done with the feet, providing hands-off flight (except when you use one hand to adjust the throttle). Air blast from the props deploys the 'chute, forward movement makes it "kite" overhead, and full rolling power creates aerodynamic lift.

CHANGES IN PROCEDURES FOR WEATHER BRIEFINGS

Pilots will now be able to receive preflight weather briefings tailored to their individual flight needs by taking advantage of procedural changes in the weather briefing format. As of August 4, 1983 any one of three types of briefings may be requested: standard, abbreviated, and outlook.

The *standard briefing* should be requested when the pilot has not received any pre-recorded or mass media weather information (e.g., PATWAS, TWEB, A.M. Weather, etc.). After giving the briefer his type of flight (VFR or IFR), aircraft number, aircraft type, departure airport, route, destination, altitude, ETE, and ETD, the pilot will automatically receive the following:

- adverse conditions
- whether VFR flight is not recommended
- synopsis of prevailing weather systems
- current conditions
- en route forecast
- destination forecast
- winds aloft
- NOTAMs
- any expected delays
- any additional information the pilot requested

Previously, pilots received much of this information whether needed or not.

An *abbreviated briefing* should be requested if the pilot has used pre-recorded or mass media weather information to make a go/no-go decision. The FSS briefer, who is aware of what information has been included in these weather broadcasts, will then "fill in the gaps" with only the information the pilot has not received (such as forecasts). Again, the pilot should provide the pertinent information about aircraft type, route, etc., tell the briefer just what source he has listened to, and ask for the abbreviated briefing.

For long-range flight planning, the pilot can ask for an *outlook briefing*, conditions expected six or more hours ahead. Of course, an abbreviated or standard briefing should also be obtained at the time of departure. Inflight weather briefings will follow the same format.

Changes to the briefing procedures are explained in detail in the August 4, 1983 edition of the *Airman's Information Manual* (purchased on subscription from Superintendent of Documents, Government Printing Office, Washington, DC, 20402). Flight Service Station specialists are also prepared to answer any pilot query about the new procedures.

LATEST AIRMAN PUBLICATIONS

Airport Design

Advisory Circular 150/5300-12, "Airport Design Standards—Transport Airports." combines the information in seven previous AC's into a single source. The circular provides standards for locating approach thresholds, surface gradients, taxiways, and runway geometrics at airports serving aircraft with approach speeds of 121 knots or greater. Free from DOT Publications Branch, M-443.1, Washington, DC, 20590.

Air Taxis

A list of FAA-certificated air taxi operators is contained in AC 135-11, "Air Taxi Operators." The current cost is $4.50 from Superintendent of Documents, Washington, DC, 20402.

PROPOSED CHART CHANGES PREVIEWED THIS SUMMER

Major changes in the format of VFR charts (sectionals, terminal area, and world aeronautical charts) have been proposed and are being displayed this summer for public comment. By the beginning of August prototypes of the new design will be shown at flight service stations, for comparison with the existing charts. On August 4 and 5 FAA cartographic experts will be on hand at the EAA Fly-in at Oshkosh, WI (and later at the AOPA Convention at Albuquerque, NM in October) to brief visiting pilots in detail and accept pilot comments.

The intention of the agency is to reduce clutter—the inevitable pilot complaint—and improve the readability of important data. Changes have been proposed in four areas of presentation: aeronautical/airway information, data included on chart margins, topographical features, and man-made features.

Among the topographical changes are darkened contour lines and gradients, removal of three-dimensional and form shading, lightening of tints, discontinued use of green elevation tints (mistakenly assumed to represent vegetation), fewer elevation color bands, and removal of the dark blue shading around shorelines.

Changes to man-made features include a different shade of yellow to indicate urban areas (the new color is easier on the eyes in daylight and more visible at night), removal of the black outline around the urban areas, enhanced railroad and transmission-line symbols, toning down of secondary roads, and omission of small town names unless used for landmarks or located near airports.

Changes to aeronautical/airway information include removal of private airport symbols (except those suitable for emergency use or as landmarks); data blocks for airports limited to three lines; a new special use airspace symbol; lighter tones for transition areas and for the blue and magenta outlines of TCAs and TRSAs; pictorial display of obstructions; new format for NAVAID information boxes; and adding fix reference data now normally found only on instrument charts.

Information contained on chart margins, such as the chart legend and explanations of special use airspace, would be printed in a less harsh blue that is easier on the eyes and more readable.

A three-phase evaluation process over the next six months will include comments by pilots at large on specially prepared evaluation forms, flight testing of the proposed charts by military and FAA pilots only—prototypes are not intended for public use—and a panel review of the economic feasibility of making any or all of the changes.

Pilots may write to FAA Cartographic Standards Section, AAT-259, 800 Independence Ave., S.W., Washington, DC, 20591 for free copies of the charts and a self-mailer evaluation form.

• Cross-Country Undefined

What is the regulatory basis of the definition of cross-country flight that appeared in the January/February 1983 "Forum"?

Gene White
El Dorado, KS

Apart from regulations on cross-country requirements for private and commercial applicants (FAR Parts 61.109 and 61.129), there is no regulatory definition of what distance constitutes a cross-country flight. For airline transport pilot applicants, flight standards has determined that any flight with a landing at a point other than that of departure is a cross-country. By extension, this latter determination applies to general aviation flights logged other than for the purpose of certification.

• Collected Osborn?

Could you tell me if Robert Osborn's aviation cartoons are available as a collection in book form?

Dr. Peyton H. Mead
Bloomfield, CT

Sorry, negative.

• Customary Forms

I'd like to clarify a couple of items in the article "Airports Of Entry" (May/June 1983). There is one form, which was not mentioned, that pilots of all private aircraft entering the U.S. must fill out. This is the "Private Aircraft Inspection Report" (CF 178), which the inspector will provide. The pilot can avoid delays by obtaining it from Customs and filling it out beforehand. Required information includes aircraft number, make, and model; pilot's number; departure and arrival points and times; foreign itinerary; and full names of all passengers. Another form which was not mentioned, but might be a convenience, is CF 4457, "Certificate of Registration for Personal Effects," which keeps you from having to pay duty on U.S.-purchased, foreign-made serialized objects, such as cameras and watches you carry with you on your trip.

As regards the "Penetration Notice" for flights entering the U.S. from southern areas, the reference to aircraft arriving over the Pacific coastline should have specified "arrived from south of latitude 33° N." Ditto for arrivals over the Gulf and Atlantic Coasts "from south of latitude 30° N."

And finally, when you say the pilot is required to assist in opening baggage and compartments, you should make it clear that if this involves inspecting other than normal storage areas, it must be done by a certificated airframe mechanic provided by Customs—who must also close up the area properly.

Thanks for the opportunity to clear up a few things in an otherwise excellent article.

Bill Stine
Washington, DC

Added errata: area code for Southern California's Customs office is 619 (not 715).

• Fit to be Tied

The item "Left Holding the Handle" in the "Briefs" section of the November/December 1982 issue reminded me of a similar incident which happened to me a number of years ago in the military. The front door warning light came on inflight in a C-119, and I sent the crew chief to check it out. About a minute later I heard a loud thump from that area. Since the front door on the 119 is in front of the No. 1 propeller, my immediate reaction was that the crew chief had been sucked out the door and had fallen through the propeller.

That was the last time I ever sent one man by himself to check out an open door in flight. The very least you should do in that situation when working on a door in flight is tie yourself into the airplane. I never learned what caused the thump, and, no, the crew chief—by some miracle—did not fall out. But it surely gave me a scare I remember to this day.

William H. Silcox
San Francisco, CA

• Duplicate Exemptions?

In the March/April 1983 "Briefs" you refer to a cross-country exemption granted to the Peachtree Dekalb Flight Academy. On November 23, 1982, Purdue University was granted an exemption which was a temporary "blanket" allowing applicants for the private or commercial certificate to qualify under the "old" or "new" cross-country requirements.

It appears FAA has granted two "blanket" exemptions for the same purpose. I would appreciate an explanation.

Mitch Grundman
W. Lafayette, IN

Effective November 15, 1982 the Federal Aviation Regulations concerning the length of extended cross-country flight training for private and commercial pilot certification, were amended. On November 23, 1982 in response to a petition from Purdue University, FAA issued an exemption notice which allowed trainees who had completed their extended cross-country flight prior to the effective date of the amendment to continue training for certification without having to repeat any of these flights—provided they completed their final certification flight test before July 1, 1983.

Subsequently, in reponse to a petition from Peachtree Dekalb Flight Academy, FAA granted an exemption which allowed applicants to continue satisfying the extended cross-country requirements as they existed before the amendment, again provided that certification was completed before July 1, 1983.

Note that neither exemption prohibited any applicants from electing to satisfy the cross-country requirements of the rules as they were amended. Incidentally, both exemptions expired on July 1, 1983. The affected FARs are Parts 61.109(b)(2), 61.129(b)(2)(ii), and Appendices A and D of Part 141.

• Pater familias

My family thoughtfully gave me a subscription to FAA General Aviation News for Father's Day, since I am the new owner of a somewhat well-used airplane. Reads well enough, but what kind of new math lets you charge us poor pilots $14 for six pretty slim issues?

C. Kent
Salt Lake City

Not math, but direct instructions from the Public Printer. Since you are mathematically minded, you are probably aware that the average annual cost (mortgage payments, landing fees, maintenance and fuel) of a single engine four-seater is over $8,000. Your family must have considered that $14 for current regulatory and accident prevention material in a readily digestible form was pretty economic insurance for someone they value.

FAA GENERAL AVIATION NEWS welcomes comments from our readers. No anonymous letters will be used, but names will be withheld on request. Address: FAA GENERAL AVIATION NEWS, AFO-807, Washington, D.C. 20591.

• Waylaid and Worried

Sure enjoyed your flying to Alaska article (May/June 1983), but on p. 10 I had a little trouble following your Alcan Highway directions. Where is the beginning of the paragraph at the top of the righthand column? You don't want us aerial cheechakos to get lost, do you?

Ivan "Snowshoe" Kaminski
Deadhorse, AK

Sorry to mess up your navigation. The **first** paragraph in the **lefthand** column of page 10 belongs at the **bottom** of the column. The paragraph "Overland West" should be transposed to follow line number 34 in the **righthand** column of **page 11.** Rough going up there, sometimes.

• AME Advice

Re your "Flight Forum" of March/April 1983 concerning a list of aviation medical examiners: allow me to advise whoever is interested that a regional directory of AME's in the Northwest Mountain region does exist and can be picked up at local flight service stations.

Berton Immenschuh
Sheridan, WY

• Remembering Max

Your article on Max Conrad (May/June 82) stirred some super memories. I flew with Max at Honeywell and kept in touch until his death. An interesting note: Probably Max's last salaried aviation job was cloud-seeding from an Aztec, but after only two weeks of employment, the insurance company discovered his age—75—and Max was reluctantly let go.

For anyone who has a love affair with aviation, I strongly recommend the book, Into the Wind, *by Sally Burgelsisen. It is the full story of Max Conrad, and I guarantee you will not put it down. I doubt there will ever be another Max. His flight from Casablanca to El Paso in his single engine Piper—56 hours and 26 minutes. Who has the mettle to try it even today?*

Yes, there was only one Max Conrad.

Bob Whempner
Daytona Beach, FL

• PIC in Name Only

In the September/October 1982 issue, you indicated in the "Instrument Corner" that no one can log pilot-in-command instrument time in instrument meteorological conditions unless they have an instrument rating. FAR's do not specifically say you can log this type of pilot time as PIC, but neither do they indicate you cannot. According to your interpretation, we now have to be rated for the condition of flight. Please advise if this is or is not correct.

Harlan V. Elliott
Ft. Worth, TX

Since publication of that answer in the "Instrument Corner," a new interpretation has been issued by the chief counsel's office: A non-instrument-rated pilot who is taking instrument instruction in IFR conditions may log that as PIC time under FAR 61.51, but may not actually serve as the PIC as defined in FAR 1.1. The other pilot must be the PIC and fully rated and current for that flight—not merely acting as a safety pilot.

U.S. GOVERNMENT PRINTING OFFICE
SUPERINTENDENT OF DOCUMENTS
WASHINGTON, D.C. 20402

OFFICIAL BUSINESS

Postage and Fees Paid
Federal Aviation Administration

Third class bulk
DOT 515

FAN SERIA300SAISSDUE004R 1
SERIALS PROCESSING
UNIVERSITY MICROFILMS INTL
300 N ZEEB RD
ANN ARBOR MI 48106

Famous Flights *(cont.)*

morning. During the descent, ice chunks from the envelope's load cascaded down on all sides, but once they started to climb again, with heavy ballasting, the ice reformed. Their maximum ceiling, 22,000′, could not be maintained without excessive ballasting, and Captain Ben was concerned about ice puncturing the top of the envelope.

In desperation he ordered a massive simultaneous ballast drop, in hopes that the abrupt climb would shake the entire ice load free. After unloading more than half their ballast he gave up and settled for a middle range, above-freezing cruise altitude, although this meant a 50 percent drop in their expected rate of travel, down to 20-30 knots. The remainder of the overwater flight was a succession of ups and downs as warmer air and ballasting allowed them to rise, while ice buildups at higher altitudes triggered precipitous descents, accompanied by veritable avalanches of icefall.

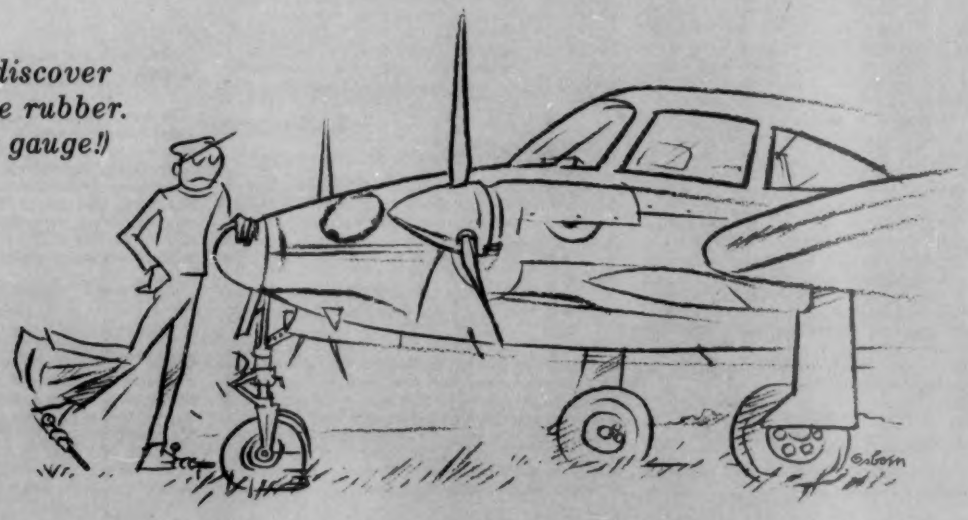
On the afternoon of the fourth day, *Double Eagle V* was contacted by a Coast Guard aircraft and given a position fix some 300 miles west of San Francisco. Considering that California was experiencing violent storms up and down the coast, a sea landing was suggested—but rejected by all four aeronauts, who were determined to actually *cross over* the Pacific before putting down. The wind was veering toward the north now and by the time they first heard the lapping of surf on sand they were over Point Arena (hidden by clouds), some 100 miles up the coast from San Francisco. The weather was becoming more violent, with snow and ice as well as rain, and there was a frantic scanning and shuffling of maps in the gondola and concern about where to land, punctuated by warning advisories from Oakland Center about high terrain in their immediate flight path.

At this time they were heading toward the 8,000′ plus Coastal Mountains which they could scarcely hope to outclimb, in view of their rapidly diminishing ballast supply and the everpresent icecap (later estimated to be weighing three tons). On their first attempt to land, in total darkness, they were nearly at housetop level when they broke out of the clouds over the town of Willits. Furious ballasting (by now they were throwing out everything not nailed down, including a $10,000 video camera) brought them up over the heavily wooded mountain slopes.

The best remaining possibility appeared to be Covelo, a tiny logging town just before the vast Mendocino National Forest. Captain Ben valved out helium to descend as the town became visible, then ordered the final ballasting as their descent rate reached 1,500 feet per minute.

The drag lines went overboard, everyone donned helmets and braced themselves as the captain fired the charges that released the envelope: They landed, fortunately, on a slope overgrown with tough manzanita brush that wrestled the gondola to a halt without causing any injuries or serious damage. In response to anxious queries emanating from their VHF transceiver, the four men informed the world that the *Double Eagle V* had crossed the Pacific and landed.

All they need now was the champagne—they still had plenty of ice.■



☆U.S. GOVERNMENT PRINTING OFFICE:1983- 381-440/304